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Committees on:
Appropriations -- Human Services -- Energy
Joint Public Hearing
Thursday, August 21, 2008

Low Income Home Energy Assistance Program
(LIHEAP)

Good Morning Chairwomen Harp and Merrill, and members of the Committees on Appropriations, Human Services and Energy.

My name is Anthony J. Vasiliou. I am currently the Executive Director of the Milford Redevelopment & Housing Partnership (MRHP). Additionally, I am the national Chairman of NAHRO's Public Housing Subcommittee and the Chairman of the Housing and Legislative Committees for the State of Connecticut and New England. NAHRO stands for the National Association of Housing and Redevelopment Officials. As you may know, in Connecticut, our organization is known as CONN-NAHRO. We represent the interests and advocate on behalf of 106 Public Housing Authorities (PHA's) located throughout the state administering approximately 17,764 units of subsidized state public housing.

Today, on behalf of CONN-NAHRO, I would like to speak in support of increasing the funding for the Low Income Home Energy Assistance Program. My testimony will focus on the needs of extremely low-income families residing in state-assisted public housing. We are asking that the legislature keep in

mind the economic hardships that our elderly, and non-elderly disabled residents are experiencing in public housing due to rapidly rising energy costs.

Specifically, we are requesting:

1.) Establish a Preference/Safety Net Assistance Program for Elderly & Non-elderly Disabled.

That during the upcoming Special Session the legislature should establish a preference or safety net assistance program in the awarding of energy assistance for elderly and non-elderly disabled individuals residing in state-finance public housing. The preference would be targeted to extremely low-income households that spend more than 50% of their adjusted gross income on rent and utilities. These would be classified as distressed households and be given a preference during the allocation of any incremental energy assistance the Executive and Legislative branches agree to support in the Special Session.

2.) Authorize DPUC & Utility Companies Study. The legislature should direct the DPUC to coordinate with the utility companies to undertake a study of the impact rising energy is having on elderly and non-elderly tenants residing in state-financed public housing. As you may be aware, the federal government reimburses PHA's by treating energy costs as pass-through costs that are eligible to receive a federal subsidy. The state chose years-ago not to pay for energy costs, designed buildings that heavily rely on electric heat (other units use gas and oil), and in most situations shifted the burden and risk of energy costs to the residents. Therefore, in Milford, and in many jurisdictions, the residents pay out-of-pocket to heat and cool their apartments and make payments directly to the utility company, United Illuminating. (See the attached graphs. Exhibit A)

3.) Fund Physical Needs Assessment (PNA) as Authorized by Public Act 07-04. We respectfully urge the legislature to appropriate up to \$2 million dollars to fund a Physical Needs Assessment (PNA)

for state-assisted public housing. The funds would be non-lapsing and be appropriated for work by the Sustainability Advisory Committee (SAC) which is tethered to DECD. This study was called for in Public Act 07-04 and authorized DECD working in unison with the Sustainability Advisory Committee, created in the same Act, to comprehensively study and conduct a uniform, and consistent Physical Needs Assessment based on a 20 year life-cycle cost model. The study would assess the condition of moderate rental, elderly, and non-elderly disabled housing and set priorities to meet the greatest need for the rehabilitation of state-assisted public housing. The study will also make certain that wise investments are made to insure the long-term viability and energy efficient operation of the existing public housing stock of 17,764 units. Unfortunately, \$5 million dollars was available to undertake the PNA, but was rescinded at the end of the fiscal year, June 30, 2008.

As referenced earlier, I have attached Exhibit A that documents the impact that energy costs are having on our extremely low-income residents in Milford's public housing. Fortunately, the MRHP working with United Illuminating (UI) on very short notice was able to obtain a 14 month history of the electric costs for our 135 units of state-financed housing in time for today's hearing. The data indicates that costs are higher for older housing developments and that lower-income households are paying more in the winter for heat than they pay for their base rents. In Milford, the base rents (minimum amount a tenant must pay) just recently increased to \$205. for a one bedroom and \$175. for an efficiency. I would argue that the state needs to conduct a study for presentation to the legislature in January of 2009 that would document the cost of utilities in state-financed housing and provide a projection of the utility costs for the 2008-2009 heating season for these same units. Going forward, this data would be available to state policy makers in shaping future programs to assist persons living in state developments.

In addition to the high cost of energy in relationship to our base rents in Milford, note the pattern of energy usage. The peak month for energy usage is November, not January/February, while the low point

is March. This documents the fact that elderly and non-elderly disabled residents cut back during the winter on heating their apartments in response to mounting energy bills. I would submit that they also face very tough choices on how to spend their fixed incomes during the heating season -- heat/food/health care/rent. We further analyzed the rent data for elderly and non-elderly residents living in state-financed apartments. The data concluded that last winter almost one out of four households were spending approximately 50% of their adjusted gross income for rent and utilities. The legislature can help to ease this burden that impacts some of the most vulnerable citizens in Connecticut by establishing a preference and then focusing attention on the issue by tracking utility costs in state-financed housing on an ongoing basis. Let me state further, that I would anticipate some fairly aggressive increases in the costs for heating this winter due to DPUC approving rate increases. These costs could be further exacerbated depending on how cold the winter is during the forthcoming heating season.

Note: The data in our study spanned a 14 month period. It captured only costs where the unit was occupied without interruption for the entire study period. The costs are based on actual billings to the residents.

Before concluding my remarks, I would like to comment further on the need to fund a Physical Needs Assessment (PNA).

The state of Connecticut has funded the development of a portfolio of 17,764 of low or moderate income units in 407 developments. We are only one of four states to make this investment in human services. Sadly, eighty percent (80%) of the portfolio was constructed prior to 1980. Moreover, of the almost 18,000 units, approximately 5,500 are considered family public housing units of which over ninety percent (90%) were constructed prior to 1960 and too many units were built more than a half a century

ago. Based on draft estimates, in the State Public Housing Portfolio, utilities are paid for by the tenants 78.5% of the time. 8,399 are heated using gas. 7,028 of the units are heated using electric heat, and 1,658 are heated using oil. (See Exhibit B) These numbers resonate when viewed in the context of how energy inefficient older buildings are like those in the state portfolio.

In a publication entitled, Bringing Home the Benefits of Energy Efficiency to Low-Income Households, (See Exhibit C) it states that "Very low-income homeowners typically live in older homes, making them vulnerable to rising energy costs. For example, homes in the Northeast built prior to 1970 use 30 percent more energy per square foot than homes built since 1990. Older homes are 20 percent to 25 percent less efficient on this basis in the South and Midwest and 10 percent less efficient in the West.¹ Clearly, the Northeast is the most energy dependent regions and inefficient users of energy in the country.

Home energy costs have increased much faster than incomes for very low-income households in recent years, rising 33 percent since 1998. Families eligible for federal home energy assistance spend one-fifth of their income on home energy bills -- six times more than the level other income groups spend.² I believe that these estimates are very modest and do not reflect the recent run-up in energy costs.

Utility bills often impose a financial hardship on very low-income households, forcing many to make desperate tradeoffs between heat or electricity and other basic necessities. A survey of households that received federal home energy assistance over a five-year period found that 47 percent went without medical care, 25 percent failed to fully pay their rent or mortgage and 20 percent went without food for at least one day as a result of home energy costs.³

¹ "Foundations for Future Growth in the Remodeling Industry," Joint Center for Housing Studies of Harvard University (2007)

² "The Increasing Burdens of Energy Costs on Low-Income Consumers," American Gas Association (September 26, 2007)

³ "2005 National Energy Assistance Survey," National Energy Assistance Directors Association (September 2005)

Due to the age Connecticut's state-financed housing portfolio, it is imperative that the legislature fund the PNA study. Clearly, this will lead to addressing the neglected backlog of maintenance and assuming adequate funding in future years, will help to alleviate the crushing cost of utilities that weighs down Connecticut's extremely low-income families.

Thank you for permitted me and CONN-NAHRO to testify before you today. If you have any questions, I would welcome the opportunity to respond. closing, I want to very briefly comment

Hopefully this information can guide the legislature in crafting language in the bill to help our residents. We hope that you can include language in the energy assistance legislation that creates a preference for elderly and non-elderly disabled persons residing in state-financed public housing.

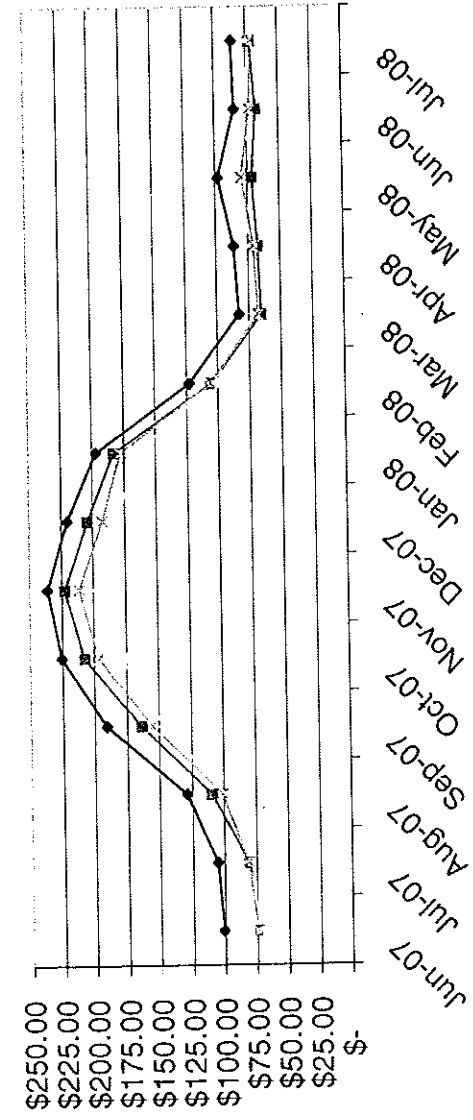
If you need additional information or a clarification, please feel free to contact me directly at: avasiliou@mhact.com or telephone me at: (203) 877-1779.

Survey Information			
Project name	Unit Sizes	Household Count	Senior HH
Jepson A	6 1-Bdms 13 Eff.	18-1 person 1-2 person	11 Senior
Jepson B	12 1-Bdms 30 Eff.	31-1 person 1-2 person	26 Senior
DeMaio Cottages	25 1-Bedrooms	24-1 person 1-2 person	25 Senior
Jagoe Court	31 1-Bedrooms	29-1 person 2-2 person	28 Senior
			Young D HH
			8 Young Disabled
			6 Young Disabled
			0 Young Disabled
			3 Young Disabled
			Construction Date
			1970
			1973
			1984
			1991

Months	Jepson A	Jepson B	DeMaio Cottages	Jagoe Court
6/13/2007	\$ 100.85	\$72.27	\$71.51	\$73.50
7/15/2007	\$ 104.99	\$80.37	\$81.09	\$81.22
8/14/2007	\$ 128.74	\$108.93	\$98.47	\$100.67
9/13/2007	\$ 190.57	\$163.27	\$145.94	\$154.96
10/14/2007	\$ 225.48	\$207.53	\$179.01	\$196.60
11/13/2007	\$ 236.22	\$222.35	\$196.65	\$211.05
12/13/2007	\$ 220.15	\$203.97	\$181.47	\$192.20
1/14/2008	\$ 196.62	\$182.60	\$164.11	\$177.07
2/12/2008	\$ 122.24	\$105.03	\$104.28	\$105.86
3/12/2008	\$ 82.53	\$64.94	\$70.23	\$67.37
4/13/2008	\$ 86.01	\$66.80	\$72.07	\$70.40
5/13/2008	\$ 97.66	\$70.99	\$81.36	\$79.24
6/12/2008	\$ 84.45	\$67.28	\$74.63	\$72.57
7/14/2008	\$ 85.91	\$71.70	\$73.41	\$70.85

Milford Redevelopment & Housing Partnership Average Monthly Electric Usage State Projects June, 2007 - July, 2008

◆ Jepson A — Jepson B — DeMaio Cottages — Jagoe Court

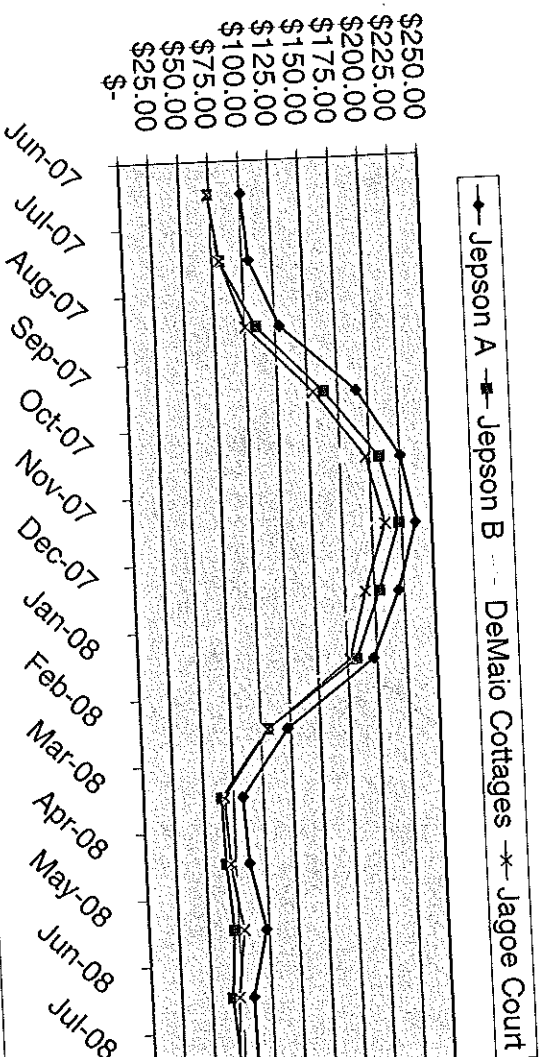


1	Draft					
2	CHFA as of August 18, 2008					
3	Oil Heating Analysis for Multifamily Units					
4	Division	CHFA		SHP		Grand Total
5		# of Properties	# of Units	# of Properties	# of Units	# of Properties # of Units
6						
7						
8	Total Portfolio	238	20 685	407	17 764	645 38 449
9						
10						
11	Oil Heating - Owner paid	26	2 446	13	551	39 2 997
12	Oil Heating - Tenant paid	9	1 033	26	1 107	35 2 140
13	Total Oil Heating	35	3 479	39	1 658	74 5 137
14						
15	Gas Heating - Owner paid	104	9 168	55	2 445	159 11 613
16	Gas Heating - Tenant paid	69	4 549	101	5 954	170 10 503
17	Total Gas Heating	173	13 717	156	8 399	329 22 116
18						
19	Electric Heating - Owner paid	10	949	19	676	29 1 625
20	Electric Heating - Tenant paid	10	1 076	165	6 352	175 7 428
21	Total Electric Heating	20	2 025	184	7 028	204 9 053
22						
23	Total Electric Heat Pump	3	656	0	0	3 656
24						
25	Total Unknown	7	808	28	679	35 1 487
26						
27	Oil Heating - Owner paid	26	2 446	13	551	39 2 997
28	Gas Heating - Owner paid	104	9 168	55	2 445	159 11 613
29	Electric Heating - Owner paid	10	949	19	676	29 1 625
30	Total Owner Paid Heating	140	12 563	87	3 672	227 16 235
31						
32	Oil Heating - Tenant paid	9	1 033	26	1 107	35 2 140
33	Gas Heating - Tenant paid	69	4 549	101	5 954	170 10 503
34	Electric Heating - Tenant paid	10	1 076	165	6 352	175 7 428
35	Total Electric Heat Pump	3	656	0	0	3 656
36	Total Tenant Paid Heating	91	7 314	292	13 413	383 20 727
37						
38						
39		238	20 685	407	17 764	645 38 449

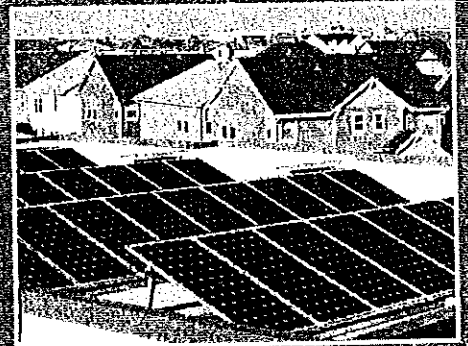
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				Construction Date
				1970
				1973
				1984
				1991

Milford Redevelopment & Housing Partnership Average Monthly Electric Usage State Projects June, 2007 - July, 2008



Bringing Home the Benefits of Energy Efficiency to Low-Income Households



The Case for a National Commitment

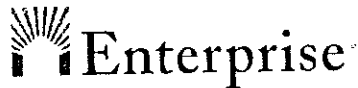
About the Author

Stockton Williams is senior vice president and chief strategy officer for Enterprise Community Partners where he leads external affairs, public policy and innovation. Williams also co-leads environmental strategy for the national nonprofit organization and serves as managing director of the Enterprise Terwilliger Fund.



About Green Communities

Green Communities is the first national green building program focused entirely on affordable housing. Launched by Enterprise in fall 2004, Green Communities is designed to help developers, investors, builders and policymakers make the transition to a greener future for affordable housing. www.greencommunitiesonline.org



About Enterprise

Enterprise is a leading provider of the development capital and expertise it takes to create decent, affordable homes and rebuild communities. For 25 years, Enterprise has pioneered neighborhood solutions through public-private partnerships with financial institutions, governments, community organizations and others that share our vision. Enterprise has raised and invested more than \$9 billion in equity, grants and loans and is currently investing in communities at a rate of \$1 billion a year. www.enterprisecommunity.org or www.enterprisecommunity.com

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Executive Summary

A national commitment to increase the energy efficiency of the homes of our nation's lowest-income citizens would significantly reduce energy use and carbon dioxide (CO₂) emissions. At the same time, it would create conventional as well as "green" job opportunities. Large-scale efforts could also help stabilize neighborhoods hard hit by high concentrations of home foreclosures.

This paper lays out a federal policy agenda to dramatically scale up energy efficiency in homes for families and individuals earning \$25,000 or less. There are more than 25 million such households—owners and renters—across the country. They pay a far higher share of their incomes for home energy, typically live in less efficient homes and feel the consequences of climate change more acutely than higher-income households.

Rising home energy costs have far outpaced income gains for very low-income people in recent years. Utility bills often impose a financial hardship on these households, forcing many to make desperate tradeoffs between heat, electricity and other basic necessities. Low-income minority communities especially bear the impact of climate change, though they have done the least to cause the crisis. Yet some policy proposals to fight climate change would impose significantly higher costs on very low-income people. Nearly half of the increased costs could come from more expensive home energy.

We can make progress on all these issues simultaneously and lock in long-term environmental, energy and other gains by making an investment in increasing the energy efficiency of their homes. A federal commitment of \$5 billion a year over 10 years could deliver huge benefits across the board: 25 percent to 40 percent energy savings in up to 25 million residential units, up to 50 million tons of CO₂ emissions avoided and hundreds of thousands of green jobs created annually when fully implemented.

Such a federal commitment is relatively modest when one considers that the U.S. Department of Housing and Urban Development (HUD) currently spends more than \$4 billion annually to pay utilities in often inefficient government-assisted properties that constitute a fraction of the homes and apartments that could benefit. And \$5 billion is a very small share of the projected revenues that would be generated under proposals to curb CO₂ emissions under consideration in Congress and supported by all the major candidates for president.

The full amount of federal support would not necessarily need to be in the form of direct spending – credit enhancements, tax incentives and other structures for generating private capital investment could be created.

The current primary federal programs to increase energy efficiency in homes for very low-income people – such as weatherization and energy-efficient mortgages – are a patchwork of small, poorly coordinated and, in some cases, poorly designed initiatives. Still, most current programs offer worthwhile elements and aspects that could be expanded and improved. In addition, several promising new federal policy initiatives are gaining ground. A comprehensive federal commitment would improve current policies and create new ones. A thoughtful, well-designed 10-point plan for very low-income home energy efficiency would:

- Build capacity to implement low-cost improvements
- Expand and leverage weatherization funding
- Ensure climate change legislation supports low-income home energy efficiency
- Fund the Energy Efficiency Block Grant and prioritize very low-income homes
- Invest in green jobs and prioritize homebuilding and rehabilitation
- Strengthen HUD's commitment to energy efficiency
- Green the revitalization of distressed public housing communities
- Improve and expand federal tax credits for residential energy efficiency and solar power
- Incentivize major financial institutions to finance energy-efficient very low-income homes
- Support research and drive innovation

These recommendations would engage public-private partnerships to help overcome a major market barrier to greater energy efficiency in buildings, especially homes for very low-income people: financing the cost of improvements. We must also encourage investments in training, technical assistance and research and expand consumer education and market-based initiatives for increasing energy efficiency in very low-income housing.

Energy efficiency is a foundation for more sustainable homes and lives. It is, however, only one component of a more holistic approach to creating better homes and communities for very low-income people and a more sustainable world. Energy efficiency in homes for very low-income families must be part of broader approaches that also improve indoor and outdoor air quality, conserve water and other natural resources, and support more equitable and sustainable land use, economic development and community reinvestment.

Introduction

Overview

Among the growing number of daunting domestic policy issues confronting federal policymakers, climate change and rising energy costs are especially complex. Each demands immediate action to stem worsening ripple effects and a sustained commitment of will and resources over time to reverse strong negative trends.

One way to make progress on both issues, and deliver other benefits to families in need, would be a national commitment to substantially increase the energy efficiency of the homes of our lowest-income fellow citizens. Such a commitment would significantly reduce energy use and CO₂ emissions while putting people to work in conventional as well as “green” jobs. Large-scale efforts could also help stabilize neighborhoods hard hit by high concentrations of home foreclosures.

This paper lays out a policy agenda for making energy-efficient homes for very low-income people a national priority. The recommendations build on initiatives already in place or moving through Congress. They are designed to engage the private sector in partnerships to overcome a major market barrier to greater energy efficiency in buildings, especially homes for very low-income people: financing the costs of improvements.¹

This paper focuses on improving energy efficiency in homes for households with annual incomes of \$25,000 or less. This figure is generally in line with the federal housing policy definition of “very low-income” and approximately equivalent to 50 percent of the national median income and 150 percent of the federal poverty level for a family of three. There are more than 25 million of these households in this country. They pay a far higher share of their incomes for home energy, are much more likely to live in less efficient homes and more adversely affected by the consequences of climate change than higher income households.

Bringing the benefits of energy efficiency at scale to very low-income households is possible with what we know today through a commitment of public sector leadership and private sector innovation. Progress will remain incremental without both. The paper aims to inform the development of both by recommending policy solutions that can be enacted in the near term. It is a first and evolving attempt

to elevate and give greater urgency to tackling a persistent problem that is too often overlooked in discussions of environmental, energy and economic issues.

The first section of the paper establishes the rationale for making very low-income home energy efficiency a national priority and frames the scope of commitment required. The next section sketches the challenges to achieving this goal and the current federal policy infrastructure that supports it. The third section of the paper lays out a national platform to get to scale. An appendix highlights the work of leading organizations as examples of opportunities ripe for the kinds of investment this paper recommends.

Context for the Recommendations

Efforts to increase the energy efficiency in rental and owner-occupied homes for very low-income families and individuals are not new. Weatherization initiatives, federal housing policies, energy-efficient mortgages and local utility programs to achieve this goal have been in existence for decades.

While these efforts have yielded tangible benefits for many families, the vast majority of homes for very low-income people are not nearly as energy efficient as they could be or should be.

There are a number of reasons for this. Energy efficiency in very low-income homes has never been a national priority. Federal funding for very low-income housing and energy efficiency has been woefully inadequate. Implementation has been fragmented across multiple programs and agencies. Experience on the ground in delivering effective approaches has been uneven. Best practices have, in some cases, been slow to develop. Research on costs and benefits has been limited.

In essence, public sector policies and private market participants that have been committed to energy efficiency in very low-income homes have been unable to connect, aggregate and take to scale

their resources and expertise. A strong federal commitment can change that.

Several factors suggest the time is now to make energy efficiency more mainstream in very low-income housing. Rising energy costs and growing public awareness of climate change is driving energy investment and innovations among a wide range of industries, including housing and construction, of which very low-income housing is an important sub-sector. Green building practices emphasizing energy efficiency are becoming more widespread among providers of very low-income housing. Officials at all levels of government are starting to take serious action on climate and energy issues, opening opportunities to create new public-private partnerships.

Perhaps most importantly, decades of experimentation, experience and evaluation have established the basis for major progress. The hard work and ingenuity of developers, architects, energy experts, building scientists, environmentalists, community groups, capital providers and policymakers has created a body of practices on which a national commitment can be built.

This paper focuses heavily on existing very low-income housing for two reasons. First, relatively few new or substantially rehabilitated very low-income homes are created in this country today, less than 100,000 annually overall, compared to more than 25 million existing very low-income units. Second, the opportunities for energy efficiency gains and CO₂ reductions at scale may be greatest in existing very low-income housing, although the need for more innovative approaches may be greater.

Policy and financing are not the only ways to increase energy efficiency in very low-income housing. Training and technical assistance for developers, architects, contractors, building owners and public agency staff, and the education of residents, is necessary to ensure the best and most enduring results. In addition, major investment to expand a national infrastructure of technical expertise in residential energy efficiency is needed. Evaluation



Two-year-old Yabir Gizaw plays in the courtyard at Broadway Crossing, a Green Communities development in Seattle. (photo by Stefanie Felix)

of costs, benefits, building performance and the experience of developers, managers and residents is also vital to continue learning what works and what approaches need refinements as well. Market-based initiatives, such as the federal Energy Star program and the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system, are also hugely important for mobilizing market forces and elevating consumer awareness. And innovation in new technologies, from analytical tools to building systems and materials, must continue.

Investments in innovation, training, technical capacity and evaluation and expansion of consumer education and market-based initiatives must go hand-in-hand with new policy approaches for financing energy efficiency in very low-income housing.

And just as financing is only one tool in what must be a comprehensive set of resources to drive deeper energy efficiency in very low-income housing, energy efficiency itself is only one component of a more holistic and sustainable approach to creating better homes and communities for very low-income people and a more sustainable world.

To deliver the fullest health and economic benefits to very low-income families and the deepest environmental benefits for communities, strategies to increase energy efficiency in very low-income housing should be part of broader approaches that improve indoor and outdoor air quality, conserve water and other natural resources and support more equitable and sustainable land use, economic development and community reinvestment.

Indeed, the Pew Center on Global Climate Change argues this larger framework is required for effectively reducing greenhouse gas (GHG) emissions throughout the built environment.

An integrated approach is needed to address GHG emissions from the U.S. building sector – one that coordinates across technical and policy solutions, integrates engineering approaches with architectural design, considers design decisions within the realities of building operations, integrates green building with smart growth concepts and takes into account the numerous decision makers within the fragmented building industry.²

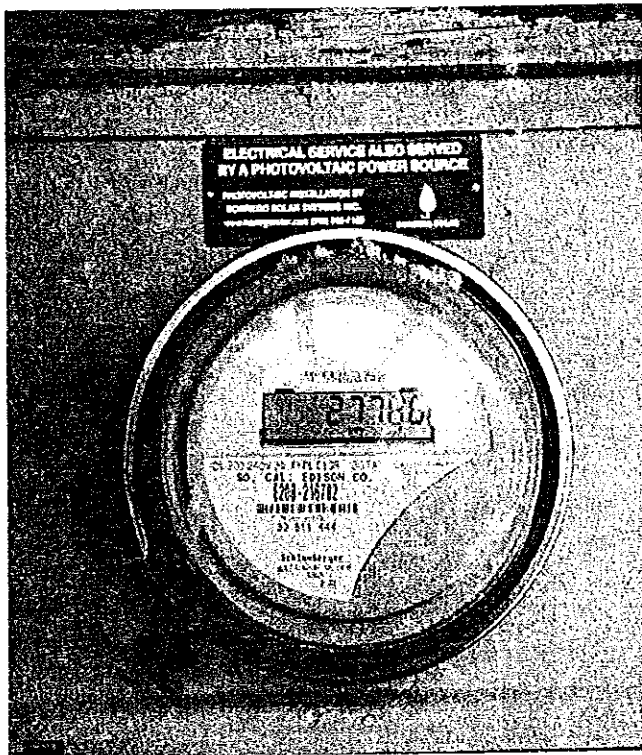
Part I: Framing the Issue

The Burdens of Home Energy Costs and Climate Change

High home energy costs and desperate tradeoffs

Very low-income homeowners typically live in older homes, making them vulnerable to rising energy costs. For example, homes in the Northeast built prior to 1970 use 30 percent more energy per square foot than homes built since 1990. Older homes are 20 percent to 25 percent less efficient on this basis in the South and Midwest and 10 percent less efficient in the West.³

Home energy costs have increased much faster than incomes for very low-income households in recent years, rising 33 percent since 1998. Families eligible for federal home energy assistance spend one-fifth of their income on home energy bills – six times more than the level other income groups spend.⁴



Energy-efficient upgrades can save low-income households hundreds of dollars each year. (Enterprise photo)

Utility bills often impose a financial hardship on very low-income households, forcing many to make desperate tradeoffs between heat or electricity and other basic necessities. A survey of households that received federal home energy assistance over a five-year period found that 47 percent went without medical care, 25 percent failed to fully pay their rent or mortgage and 20 percent went without food for at least one day as a result of home energy costs.⁵

Inequitable consequences of climate change and its proposed solutions

A report from the Congressional Black Caucus Foundation found that African-Americans are “disproportionately burdened by the health effects of climate change,” including increased deaths from heat waves and extreme weather, as well as air pollution and the spread of infectious diseases. African-Americans will also bear the brunt of

unemployment and economic hardship exacerbated by climate change, according to the report, even though they emit 20 percent less CO₂ than whites.

The report concluded: "Stark disparities exist in the United States between those who benefit from the causes of climate change and those who bear the costs of climate change."⁶

Yet proposed approaches to tackle climate change by capping CO₂ emissions would have deleterious effects on low-income people. The Congressional Budget Office (CBO) has determined that:

Regardless how the [CO₂ emissions] allowances were distributed, most of the cost of meeting a cap on CO₂ emissions would be borne by consumers, who would face persistently higher costs for products such as electricity and gasoline. Those price increases would be regressive in that poorer households would bear a larger burden relative to their income than wealthier households would.⁷

The CBO noted that climate change policies that had only the "modest" effect of reducing emissions by 15 percent would impose an estimated \$750-\$950 a year in added costs, on average, on very low-income families.⁸ By far the greatest share of these higher costs – 45 percent – would come from more expensive home energy, according to the Center on Budget and Policy Priorities.⁹

Benefits of Increasing Energy Efficiency in Very Low-Income Homes

Higher quality homes and stronger communities

Improving energy efficiency in very low-income homes can deliver tangible financial benefits. The Department of Energy (DOE) reports that Energy Star qualified homes deliver \$200-\$400 in annual savings compared to conventional homes, with additional savings on maintenance.¹⁰ An Ohio program to create 150 Habitat for Humanity homes

achieving Energy Star certification generated an average annual savings of \$460.¹¹

For multifamily apartment owners, more energy-efficient buildings may generate more stable cash flow from rents. To the extent energy improvements were part of more holistic green building rehabilitations, rental properties may be more durable and higher performing and potentially more valuable assets to own over the long term.

An analysis of the costs and benefits of "green" low-income housing, by New Ecology and the Tellus Institute, concluded: "For residents of affordable housing units, the life-cycle financial outcome [of energy and healthy home upgrades] is almost always positive. In virtually all the cases, energy and water utility costs are lower than their conventional counterparts."¹²

In addition, studies of home weatherization and retrofit programs have catalogued an "array of benefits beyond energy savings," including greater comfort, convenience, health, safety and noise reduction. These "non-energy benefits" have been broadly estimated to be worth 50 percent to 300 percent of annual household energy bill savings.¹³

Investments in home rehabilitation can stabilize struggling communities and increase property values. One report found that rehabilitation efforts increased surrounding home prices by 4 percent and further concluded that: "Because neighborhoods with substantial rehabs are most often those in economic decline, the opportunity cost of inaction, over time, may be greater than the apparent observed effect."¹⁴ Large-scale home rehabilitation initiatives have been shown to be highly cost effective investments for local governments that strengthen local economies.

Progress on climate change

Energy efficiency in very low-income housing at scale also can help fight climate change. Residential units consume 22 percent of the nation's energy and

cause 20 percent of our greenhouse gas emissions.¹⁵ The 25 million-plus units that are home to our lowest income citizens are almost one-quarter of all residential units in the country.

Most of these units were built before 1980 and many were poorly constructed. Not surprisingly, lower income households use 28 percent more energy per square foot than higher income households primarily because they live in older, less energy-efficient homes, according to the Energy Programs Consortium.¹⁶

While research on the CO₂ reduction potential from energy efficiency in very low-income homes is limited, it indicates significant impact. One recent analysis suggests that the 34 million households eligible for federal home energy assistance generated 276 million tons of CO₂ emissions, 27.5 percent of total emissions from residential units overall.¹⁷ Another study found that weatherizing 12,000 homes in Ohio avoided more than 100,000 pounds of sulfur dioxide and 24,000 tons of CO₂, while cutting average utility costs for low-income homeowners by an average of several hundred dollars per year.¹⁸

In addition, increasing energy efficiency in very low-income homes attacks a significant contributor of greenhouse gas emission in the U.S., residential homes, at the root of the problem: the buildings themselves. And it reduces emissions for the long term. Other approaches to ensuring equity in climate change policy, such as helping low-income people afford higher energy costs, while critically important, do not deliver these enduring systemic benefits.

Green job creation and innovation

Investment in increasing energy efficiency in very low-income homes would generate significant economic activity in the construction industry at a time it could use a boost. According to the Center for American Progress, residential construction employment – the component of the construction sector most directly affected by the housing slump

Energy efficiency and broader green home rehabilitation and new construction can be a promising basis for creating “green collar” jobs for very low-income people.

– fell nearly 7 percent in 2007, a loss of nearly 200,000 jobs.¹⁹ Smart federal investments can help this critical industry to our economy bounce back more quickly.

Energy efficiency and broader green home rehabilitation and new construction can be an especially promising basis for creating good “green collar” jobs for very low-income people. A recent study identified 22 different job sectors of the U.S. economy that currently provide workers with green collar jobs, of which 11 were directly (although not exclusively) related to green home rehabilitation, including several specifically tied to energy efficiency.²⁰

The condition of many of the homes where our lowest income citizens live creates opportunities for significant energy savings and other environmental improvements through cost-effective rehabilitation measures. These approaches – insulation; chimney and roof repairs; caulking and sealing; window replacements; installation of energy-efficient equipment – offer good paying jobs for which low-income workers can be trained and employed.

Increased investment in green very low-income home rehabilitation could create these jobs at scale. A report on a German residential energy efficiency initiative showed more than 140,000 jobs were saved or created in retrofitting 200,000 homes.²¹ DOE estimates that every \$1 million invested in weatherization programs creates 52 low-income community jobs.²²

Of course, not all construction jobs on green very low-income developments could fairly be characterized as "green jobs" absent an intentional effort to provide training in the aspects of the work that were more energy efficient and environmentally responsible. Even without such an explicit commitment, green home rehabilitation and construction "does have the potential to create entry level job opportunities for low-income and people of color when cities implement a combination of policies that promote green building, job training and labor standards."²³

Green jobs associated with very low-income housing can be created outside construction as well in the areas of home energy audits, inspections and building performance testing. And as innovation and public policies accelerate market penetration of renewable energy technologies, additional opportunities should emerge to create more green jobs and deliver the energy and environmental benefits of clean energy to low-income people through energy-efficient home construction and rehabilitation.

Finally, investing in energy efficiency in very low-income housing can spur industry innovation. As Dan Reicher of Google, formerly federal Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, has noted:

The advanced technologies pioneered in the federal low-income weatherization program could be readily applied to the U.S. housing stock at large with even greater energy savings. One technology developed by the Department of Energy uses a pressurization device and simple infrared sensors to pinpoint leaks down to the size of a nail hole for about \$100 per home. With this information, insulation can be installed in the right places for the least amount of waste.²⁴

The Scope of Commitment Required

Energy savings levels and the costs

The levels of energy efficiency achievable in existing very low-income housing will vary significantly based on the building's age, location, physical condition, type of construction and financing structure, including requirements or incentives in any government funding the building may receive, as well as the availability of new resources specifically for energy efficiency improvements. With those caveats in mind, some broad generalizations can help define the scope of commitment required.

Energy savings in existing multifamily buildings of 25 percent to 40 percent may be gained through measures such as boiler upgrades, ceiling insulation, caulking, sealing and storm windows, for roughly \$2,500 per unit and pay back their costs in 5-10 years.

Energy savings of 40 percent to 50 percent generally would require substantial rehabilitation of the building, including measures such as installation of high efficiency equipment and systems, double pane windows and new insulation. Costs could average up to \$50,000 per unit – although much of the cost would be incurred anyway as part of rehabilitation – and the payback period could be 8-10 years, perhaps longer. There may be additional costs to relocate residents.

The range for existing single-family homes is broadly similar to that for existing multifamily buildings. At the lower end of cost, a recent update of several studies on energy savings from weatherization found an average savings of roughly 30 percent were achievable for less than \$3,000 per home. At the higher end, there is a general consensus that a full scale retrofit of a single-family home to achieve 50 percent energy efficiency would cost roughly \$50,000.²⁵

Savings in new construction of multifamily residential buildings can be harder to project due to the difficulty

in establishing the proper baseline for comparison. One leading effort, the New York State Energy Research and Development Authority (NYSERDA) Multifamily Building Performance Program, is projecting 20 percent savings for participating developments compared to conventional projects.²⁶

In terms of new single-family homes, the Energy Star program has shown a savings of 16 percent as a result of installing 10 Energy Star upgrades in a single-family home. All 31 types of Energy Star products together can improve the energy efficiency of an average home by as much as 30 percent to 40 percent, according to DOE.

Based on these broad generalizations, it is possible to outline a rough estimate of the costs of a 10-year commitment achieving energy efficiency at depth and scale in very low-income housing.

Federal investment of \$5 billion a year over 10 years could achieve 25 percent to 40 percent energy savings in up to 25 million residential units, cut up to 50 million tons of CO₂ emissions and create hundreds of thousands of green jobs annually when fully implemented.

Such a federal commitment is relatively modest when one considers that the U.S. Department of Housing and Urban Development (HUD) currently spends more than \$4 billion annually to pay utilities in often inefficient government-assisted properties that constitute a fraction of the homes and apartments that could benefit.²⁷ (A 5 percent cost savings would free up \$1 billion over five years to make new, more energy-efficient investment, without any new spending.) And \$5 billion is a very small share of the projected revenues that would be generated under proposals to curb CO₂ emissions under consideration in Congress and supported by all the major candidates for president.

The full amount of federal support would not necessarily need to be in the form of direct spending – credit enhancements, tax incentives and other structures for generating private capital investment could be created, as discussed below.

Setting priorities

Considering the wide range of benefits of scaling up energy efficiency in very low-income housing described earlier, these costs should be seen as modest, and investments we must make. It is, by definition, a long-term commitment.

Reaching all the very low-income homes that would benefit from energy improvements would require a long-term commitment for practical as well as budgetary reasons. There is a range of need across the stock of 25 million-plus very low-income homes. And as noted, there is a need to scale up the delivery system for a major national commitment. Even conventional residential building envelope retrofits, encompassing insulation, efficient windows and duct and air infiltration sealing, are estimated to achieve less than 5 percent of the overall residential market.

Initial investments should prioritize homes that are most in need – generally older ones built before 1980. Buildings that warrant the most extensive renovation will offer the greatest opportunities for the most enduring impact.

With respect to newer buildings, consideration should be given to targeting resources to methods most likely to achieve the deepest energy efficiency gains, such as insulation, sealing and replacing heating and cooling systems; although wherever possible the most holistic green construction and rehabilitation approaches should be implemented even on more moderate scale rehabilitations.

There is no more time for small-scale solutions and incremental progress. Policymakers must act with urgency and seriousness of purpose. Global challenges and their impact on very low-income people and communities demand new commitments of funding from public and private sources; new leadership from business, political and community leaders; and new imagination about the connections – between climate and community; between development and sustainability; between equity and efficiency – from all of us.

Part II: Current Challenges and Federal Policies

Challenges

Of the more than 25 million households that earn \$25,000 or less, roughly two-thirds are renters (including 1.2 million families in public housing) and one-third are owners. In addition to the broader market barriers to greater energy efficiency in buildings, other challenges exist specific to this segment of the built environment.

First are the incomes of the residents. Very low-income renters typically can afford only modest monthly payments, which constrains the ability of landlords to make improvements. And more than half of low-cost, privately owned rental stock was built at least 30 years ago. According to Harvard University's Joint Center for Housing Studies, "much of [the inventory] is owned by individuals without the skill and resources to manage the properties profitably. And when their rental units cannot generate enough revenue to cover basic operating costs, these owners have little choice but to cut back on maintenance and repairs."¹⁸

Very low-income home owners may only be able to afford homes that are in poor condition to begin with and may have less income with which to make energy improvements during their tenure of ownership. The Harvard University Joint Center for Housing Studies also reported:

While low-income households will, out of necessity, replace furnaces or appliances that break, they will not usually install insulation or other more costly measures because they lack the money to do so. Instead, they often take simpler and less effective steps such as putting plastic on windows in the winter and using towels to stop drafts from doors and windows.²⁹

With respect to the relatively small numbers of new very low-income homes being created, rental housing developers are focused on keeping development costs as low as possible to limit debt service and maximize cash flow from rents. Energy efficiency measures can add marginally to development costs.



Galen Terrace in Washington, D.C. is a Green Communities rehabilitation of a formerly distressed property.
(photo by Lloyd Wolf)

Even though the life cycle benefits of energy efficiency measures typically justify a higher first cost and often pay back their costs quickly, the private and public entities that provide funding for very low-income rental housing generally have not been willing to factor these considerations into their underwriting and provision of development financing. In fact, public programs on which very low-income rental housing depends for funding often cap the total amount of subsidy available and limit overall development costs as well.

In addition, energy use may not be as predictable in residential rental buildings as in other properties, such as offices, due to the lifestyles of residents and broader occupancy patterns in the building. Energy use in very low-income rental developments serving special populations such as seniors, mentally ill and people with AIDS, may be even more difficult to model.

Another challenge is the problem of "split incentives" inherent in energy efficiency in many building types; this poses particular problems for very low-

income housing owners. In market-rate housing, developers can (at least in theory) pass on additional development costs to tenants. Very low-income housing often has restricted rents, required by public funding programs, so higher development costs generally must be absorbed by the developer's profit or building reserves.

To the extent that developers/owners could realize some of the cost savings from more energy-efficient properties, they would have greater incentive and ability to invest in energy upgrades. A few public housing agencies and private owners of federally subsidized very low-income properties have developed approaches to do this at the local level, but current rules effectively prevent most from following suit.

The problem is especially acute for properties assisted with Low Income Housing Tax Credits (LIHTC), which constitute a critical segment of the federally subsidized inventory and account for almost all newly created very low-income rental units.³⁰ Developers of LIHTC-financed properties

For every 100 very low-income renters nationwide, there are just 77 apartments that are affordable, available and physically adequate.

must reduce rents by the amount of a resident "utility allowance," established in most places by local public housing authorities and in some areas by utility companies.

In many areas, the utility allowance estimates for tax credit developments are based on older properties with much higher energy costs due to less efficient design and construction than is possible and increasingly common today. This results in higher than necessary utility allowances for many tax credit properties and reduces the incentive for developers to incorporate energy- and water-efficient features into their developments. Owners generally are not able to use alternative sources or methodologies to establish more accurate utility allowances.³¹

Finally, it is critical to note that the huge shortfall in funding for very low-income housing needs itself is both a cause of some of the current conditions described and a barrier to addressing them. Housing problems are especially acute for very low-income renters – those earning 50 percent or less of their area's median income (\$29,500 on a national basis). According to HUD, nearly 6 million very low-income renters have "worst case needs." They do not receive federal rental housing assistance and either pay more than half their income for rent or live in severely substandard housing. Nationwide, only 77 units are affordable, physically adequate and available for every 100 very low-income renters.³²

Current Federal Policies to Increase Energy Efficiency in Very Low-Income Homes

The primary federal programs to increase energy efficiency in homes for very low-income people are a patchwork of small, poorly coordinated and, in some cases, poorly designed initiatives. Within each, however, are elements that could be improved and expanded with potential for greater impact. Following is a summary of major policies and programs.

- Weatherization
- Energy-efficient mortgages
- Tax credits
- HUD pilot programs
- HUD public housing policies
- Energy Star initiatives

Weatherization

The primary federal program to support energy efficiency for very low-income homeowners is the Weatherization program administered by DOE. Weatherization assistance is available to households up to 150 percent of poverty level (about \$27,000 for a family of three in 2007). These households spend an average of nearly \$1,700 annually on energy, 16 percent of their total income, compared to 5 percent for households at the median income level.³³

Weatherization funds pay for a wide variety of energy efficiency measures that encompass the building envelope, its heating and cooling systems, its electrical system and electricity consuming appliances. The average expenditure per home is \$2,744, resulting in average energy savings of \$358 per year and reducing household annual gas consumption by an average of 32 percent.³⁴

In recent years, Weatherization providers have begun to take a broader "whole house" approach that integrates health and safety improvements with weatherization measures and work with other governmental agencies and community-based organizations to leverage resources. These approaches are described as "Weatherization Plus."

Weatherization has upgraded 5.5 million low-income homes since 1976, but 28 million more remain eligible. In 2006, the Department of Energy's budget provided \$245 million for weatherization, enough for only about 100,000 homes.³⁵ (States may supplement their Weatherization allocations with a portion of their annual federal Low Income Home Energy Assistance [LIHEAP] block grants, which helps very-low income families pay their heating and cooling bills.)

Energy efficient mortgages

Energy efficient mortgages (EEMs) can be used by homeowners to finance more energy-efficient new homes and energy upgrades of existing homes. Projected energy savings are added to the borrower's income, allowing the borrower to qualify for a larger total mortgage amount. The EEM also allows borrowers to add the costs of energy improvements into the total mortgage amount. The total costs of the energy improvements, typically up to 15 percent of the value of the home, are paid over the life of the mortgage, freeing up additional income for the borrower. In addition, the appraised value of the home is adjusted upwards by the value of the energy upgrades.

The federal government supports EEMs by insuring them through the Federal Housing Administration (FHA) and Veterans Administration (VA). The federal government also certifies private lenders to provide EEMs through the Energy Star program, which does not provide the same security as the FHA or VA programs but offers Energy Star certification. (Some banks offer EEMs, some through a Fannie Mae product and a few states offer EEMs or similar products as well.)³⁶

Despite being available in various forms for nearly 30 years, EEMs have never constituted more than a tiny share of the mortgage market. FHA, for example, reported insuring only 441 EEMs in 2005 and 470 through the first half of 2006.³⁷ Government agencies and secondary mortgage market players have not aggressively marketed EEMs and lenders have been reluctant to take on the additional

paperwork required. In recent years, the value of the EEM to the buyer/owner has not been competitive with other widely available conventional and subprime mortgage products.

Tax incentives for energy-efficient improvements, new homes and solar

A federal income tax credit of up to \$2,000, the Energy Efficient New Home Tax Credit, is available to contractors for new energy-efficient homes, including manufactured homes constructed in accordance with the Federal Manufactured Homes Construction and Safety Standards. The New Energy Efficient Homes Credit is available for homes of up to three stories, regardless the number of residential units.

Site-built homes qualify for the credit if they are certified to reduce energy consumption by 50 percent relative to the International Energy Conservation Code standard and meet minimum efficiency standards established by the Department of Energy.

The credit appears to have had limited use to date due to its short-term nature, expiring in 2008; limited incentive (especially in light of the rigorous standards for energy performance); technical and regulatory issues with IRS; and weak industry marketing. Another weakness of the credit's design is that it effectively only applies to single-family homes, notwithstanding the allowance for structures up to three stories in height.

The Business Energy Tax Credit provides a credit of 30 percent of expenditures for qualified "energy property," including solar technologies that can be used on multifamily affordable developments, among other purposes. For solar, energy property includes equipment that uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat. It does not include public utility property, passive solar systems, or pool heating equipment. The energy property must be operational in the year in which the credit is first taken.

Generally, if a development has other financing from a public source, the developer must reduce the "basis" for calculating the credit by the amount of any such incentives received, making it much less valuable. Since very low-income multifamily housing often relies heavily on government financing, including other tax credits, this provision of the Business Energy Credit limits its effectiveness in supporting the full costs of installing solar technologies in very-low income developments. In addition, the tax credit amount for solar will be reduced to 10 percent from 30 percent in 2009, absent a legislative change by Congress.

HUD pilot programs

HUD has launched two pilot programs to increase energy efficiency in federally assisted properties: the Multifamily Energy Efficiency Initiative and the Green Initiative.

Through the Multifamily Energy Efficiency Initiative, HUD's field office with jurisdiction over California, Nevada, Arizona and Hawaii, is providing energy audit and technical assistance to subsidized multifamily properties through partnerships with energy efficiency technical assistance providers. Property owners requesting long-term renewal of federal rental assistance contracts are requested to undertake a project energy audit and incorporate cost-effective energy efficiency measures in the project refinancing and project reserve for replacement plans.

In addition, HUD is assisting sponsors of rental developments serving seniors with the HUD Section 202 program by identifying cost-effective energy efficiency improvements that can be reasonably included in their refinancing plans.

HUD is requesting project sponsors to prioritize energy investments with payback periods of five years or less as part of the project's refinancing transactions or alternatively in conjunction with project operating or reserve for replacement plans. HUD believes

these transactions have the necessary financing capacity and contract administration processes in place to accomplish energy retrofits capable of reducing energy consumption by 20 percent or more, according to the Affordable Housing Energy Efficiency Alliance.

HUD's Green Initiative is a nationwide pilot program to encourage owners and purchasers of very low-income, multifamily properties to rehabilitate and operate their properties using sustainable building principles. Through the initiative, HUD generally will cover almost all the costs apartment owners are otherwise required to pay for building improvements under HUD regulations when they refinance their properties under HUD's "Mark to Market" financial restructuring program – if those improvements are environmentally sustainable, including energy efficiency measures.

Also, upon the owner's assurance that the property management company has a LEED accredited professional on staff, HUD may increase the fee to support the owner's ongoing maintenance of the property. The initiative is voluntary for building owners.

HUD public housing policies

Public Housing Authorities (PHAs), which operate public housing locally, are required to conduct energy audits of their projects at least every five years and incorporate the most cost-effective measures into their capital improvement plans, including insulation, weather stripping, storm doors and windows, flow restrictors for hot water lines, improved boiler controls, solar energy systems and installation of individual utility meters.

PHAs are required to take all identified cost-savings measures "as funds become available," which, given years of federal funding cuts, has not been the case for most agencies. Agencies have flexibility to allocate resources among energy improvement options based on a comparison of costs and payback periods.

Until recently, PHAs tracked and reported financial data – including energy consumption – on a portfolio-wide basis, instead of on a property-by-property basis. An outside evaluation found that this system was not effective at encouraging energy conservation in public housing. HUD is in the process of implementing a new asset management model that will calculate and obligate operating subsidies on a property-by-property basis.

Agencies will adopt the asset management approach over the next several years. HUD believes the new asset management model and formula for determining operating subsidies for PHAs will “encourage additional agencies to take advantage of financial incentives and strategies for reducing utility consumption, such as energy performance contracts.”³⁸

Generally, PHAs that undertake energy efficiency measures financed by an entity other than HUD, such as an energy service company (ESCO), can retain the full amount of any energy savings for the duration of the financing arrangement, provided that 75 percent of the savings are used to pay off the debt. The balance of any savings may be used for any eligible operating expense.³⁹

Only a fraction of PHAs nationally – 117 agencies overall – have undertaken or are undertaking energy performance contracting, but there is growing interest in this approach. Between 2000 and 2006, the number of PHAs with energy performance contracts increased by an average of 20 percent per year and the total amount PHAs have invested in such contracts has increased an average of 24 percent annually. Significantly, among the 117 agencies that have worked with ESCOs, are one-third of all “larger PHAs” (those with more than 1,250 units). In 2006, these 117 PHAs invested \$351 million in energy performance contracts, achieving a projected guaranteed annual savings of \$37 million.⁴⁰

In addition, HUD recently issued regulations, required by statute, extending the allowable contract terms for ESCOs working with PHAs to 20 years,

which should encourage more PHAs to consider energy performance contracting.

Energy Star initiatives

HUD and the Department of Energy have developed a web-based resource to simplify the process for obtaining Energy Star product price information and purchasing Energy Star products at lower prices. The Energy Bulk Purchasing Tool (www.quantityquotes.net) offers public housing authorities, very low-income housing sponsors and other public and community-based organizations a one-stop site to access a broad menu of Energy Star products and equipment at competitive bulk purchase pricing, as agreed to by the manufacturers and suppliers listed on the site. Because the number of participating manufacturers and suppliers of Energy Star products is not restricted, the quotes provided are expected to be competitive.

Also, Energy Star is now the standard for PHA procurements of refrigerators, lighting, furnaces, washers and dryers and other equipment when such purchases result in energy savings that, over the expected life of the equipment, meet or exceed any incremental cost increase of purchasing and maintaining Energy Star products.

Part III: The Federal Policy Agenda

The aforementioned programs all contain worthwhile elements that could be expanded and aspects that could be improved. In addition, however, new policies are needed to advance energy efficiency in very low-income housing at scale. The good news is that several promising initiatives are advancing in the federal policy process. A comprehensive federal policy commitment to advancing energy efficiency in very low-income housing includes improvements to current tools and the creation of new ones in development. The agenda calls for:

- Building capacity to implement low-cost improvements
- Expanding and leveraging funding for weatherization
- Ensuring climate change legislation supports low-income home energy efficiency
- Funding the Energy Efficiency Block Grant and prioritizing very low-income homes
- Investing in green jobs and prioritizing homebuilding and rehabilitation
- Strengthening HUD's commitment to energy efficiency
- Greening the revitalization of distressed public housing communities
- Improving and expanding federal tax credits for residential energy efficiency and solar power
- Incentivizing major financial institutions to finance energy efficient very low-income homes
- Supporting research and driving innovation

Build capacity to implement low-cost improvements

Significant energy efficiency gains can be achieved through a range of no- and low-cost measures. Basic education on the practices and modest assistance in implementing them for more very low-income housing developers, property managers and residents would be a low-cost, high-yield investment. Additional capacity is needed in the related fields of energy audits, home inspections and performance testing.

An especially cost effective approach is an "integrated design" process. The term refers to a collaborative, multidisciplinary, non-linear process in which all members of the development team, and ideally low-income community residents, jointly determine, define and implement

the development program and the specific methods and metrics for its environmental sustainability. Research has shown that an integrated design process can cut energy use in buildings by 35 percent to 50 percent compared to conventional design processes, at little or no additional capital cost, but with potential additional design cost.⁴¹

There is no federal program to build capacity in these areas among organizations committed to increasing energy efficiency in very low-income homes. A bill introduced in Congress, the High-Performance Building Act of 2007 (H.R. 1259), would provide \$10 million annually over five years for this and similar purposes, subject to a dollar-for-dollar match from non-governmental sources by grant recipients. Congress should pass and fund this proposal.

Expand and leverage funding for weatherization

The federal Weatherization program should be expanded – it is a proven program that delivers cost effective energy and environmental benefits for low-income people. The Energy Independence and Security Act of 2007 (P.L. 110-140, H.R. 6) authorizes \$3.75 billion for Weatherization over five years. The Lieberman-Warner America's Climate Security Act (S. 2191) also would provide additional funding for the program.

Ultimately, however, a new mechanism for financing weatherization and deeper energy upgrades must be created; even with a huge funding increase it would take decades to make a dent in the energy needs of eligible households solely through the current grant-based approach. Creative new private-public partnerships are needed.

There are a variety of potential mechanisms to spur private sector investment in weatherization. One possible approach, described by formerly federal Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, Dan Reicher, would:

Aggregate thousands of homes eligible for

weatherization in a locality; establish a baseline of energy use as well as associated GHG and other emissions across the portfolio of homes; install advanced metering to monitor post-investment savings as well as provide utility load control; secure federal and state funding as well as carbon offset, pollution credits, and utility capacity payments; leverage private sector investment in the aggregated portfolio through a "shared savings" approach or other financial mechanism; benchmark the investment to enhance replication.⁴²

Ensure climate change legislation supports low-income home energy efficiency

The bipartisan Lieberman-Warner America's Climate Security Act has enlisted broad congressional support and the backing of leading environmental organizations. The bill has advanced further in Congress than any major climate change proposal to date, passing the Senate Environment and Public Works Committee last year.

The bill commendably would allocate 18 percent of funds from allowances to an Energy Assistance Fund. Of the amount allocated to the Fund, 50 percent would be dedicated to LIHEAP, 25 percent to Weatherization and 25 percent to a new rural energy assistance program.

While these resources would significantly assist very low-income consumers, they would leave out a large number and miss an opportunity to further increase energy efficiency, cut carbon emissions and create jobs. As drafted, the Fund would provide virtually no resources to increase energy efficiency in *new* homes or *existing rental homes* for very low-income people.

The solution is to provide a small share of resources from the Fund to support the HOME Investment Partnerships Program. This block grant is administered by states and cities mainly for the rehabilitation and construction of rental and owner-occupied homes for low-income families.

HOME has a highly successful 15-year track record and strong bipartisan support in Congress and among governors and mayors. HOME's efficiency, effectiveness and ability to generate private sector investment in housing have been shown in a number of evaluations.

HOME's eligible uses already include measures that directly increase the energy efficiency of very low-income homes. These uses could be specified as the only eligible uses of resources provided through the Energy Assistance Fund.

A \$500 million investment in HOME could cut energy use by 20 percent to 30 percent in 150,000 low-income homes (comparable cost effectiveness and energy savings benefit to weatherization, and often more holistic), avoid up to 300,000 tons of carbon emissions on an annual basis and create thousands of good paying green and conventional jobs annually.

Fund the Energy Efficiency Block Grant and prioritize very low-income homes

The Energy Independence and Security Act of 2007 created a new Energy Efficiency and Conservation Block Grant Program. The block grant would provide \$2 billion annually over five years to states and cities for a wide variety of activities related to energy conservation and efficiency. While Congress enacted this program, it has not yet provided funding for it.

Many of the eligible uses include purposes directly related to increasing the energy efficiency of very low-income homes: conducting energy audits; providing grants to nonprofit organizations to perform energy efficiency retrofits; developing/implementing energy efficiency programs for buildings; promoting zoning guidelines; developing building codes; public education programs; and onsite renewable energy technology that generates electricity from renewable resources (solar and wind energy, fuel cells and biomass).

A \$500 million investment in HOME Investment Partnership Program could cut energy use by up to 30 percent in 150,000 low-income homes.

The Secretary of Energy is charged with developing regulations for block grant, including its funding allocation formula. Congress should fund this program and DOE should encourage cities and states to prioritize very low-income home energy efficiency initiatives with the funds.

Committing 25 percent of the amount authorized to very low-income home energy efficiency could cut energy use by 20 percent to 30 percent in 150,000 low-income homes (comparable cost effectiveness and energy savings benefit to weatherization, and often more holistic), avoid up to 300,000 tons of carbon emissions on an annual basis and create thousands of good paying green and conventional jobs every year.

Invest in green jobs and prioritize homebuilding and rehabilitation

The Energy Independence and Security Grant also authorized \$125 million to create green jobs. Congress has not yet funded the program.

Under the bill, the Secretary of Labor, in consultation with the Secretary of Energy, would establish an energy efficiency and renewable energy worker training program by awarding National Energy Training Partnership Grants on a competitive basis to eligible entities. Eligible entities would be nonprofit partnerships with public or private employers and labor organizations, as well as workforce investment boards, community-based organizations, educational institutions, small businesses, cooperatives, state and local veterans agencies and veteran's service organizations.

Another component of the training initiative is the Pathways Out of Poverty Demonstration program, which seeks to demonstrate how quality training can lead to job ladders that bring individuals with incomes of less than 200 percent of poverty up to at least a level of self-sufficiency.

Congress should fund the program at the authorized level and the Labor Department should work with HUD as well as DOE to leverage green job creation opportunities through federal housing and community development programs.

Strengthen HUD's commitment to energy efficiency

HUD should track and communicate the early experience from the Multifamily Energy Efficiency Initiative and the Green Initiative. HUD should move aggressively to expand these and similar pilot programs within existing statutory and regulatory authority and current appropriations.

In addition, HUD should work with leading PHAs and industry trade associations to implement the asset management approach to PHA portfolios with an explicit goal of increasing energy efficiency in the stock. HUD, PHAs, ESCOs and other stakeholders should redouble efforts to make energy performance contracting more viable for PHAs and very low-income apartment owners. Regulatory flexibility from HUD for demonstration initiatives, including expanded authority to issue bonds, could help drive further experimentation.

HUD also should demand greater energy efficiency in other programs. The department awards more than \$2 billion in competitive grant funds annually through a number of programs to build, rehabilitate and operate multifamily rental housing. HUD has established small incentives in some programs for Energy Star; these incentives should be strengthened.⁴³

Experience on the ground strongly suggests HUD can raise the bar in energy performance without

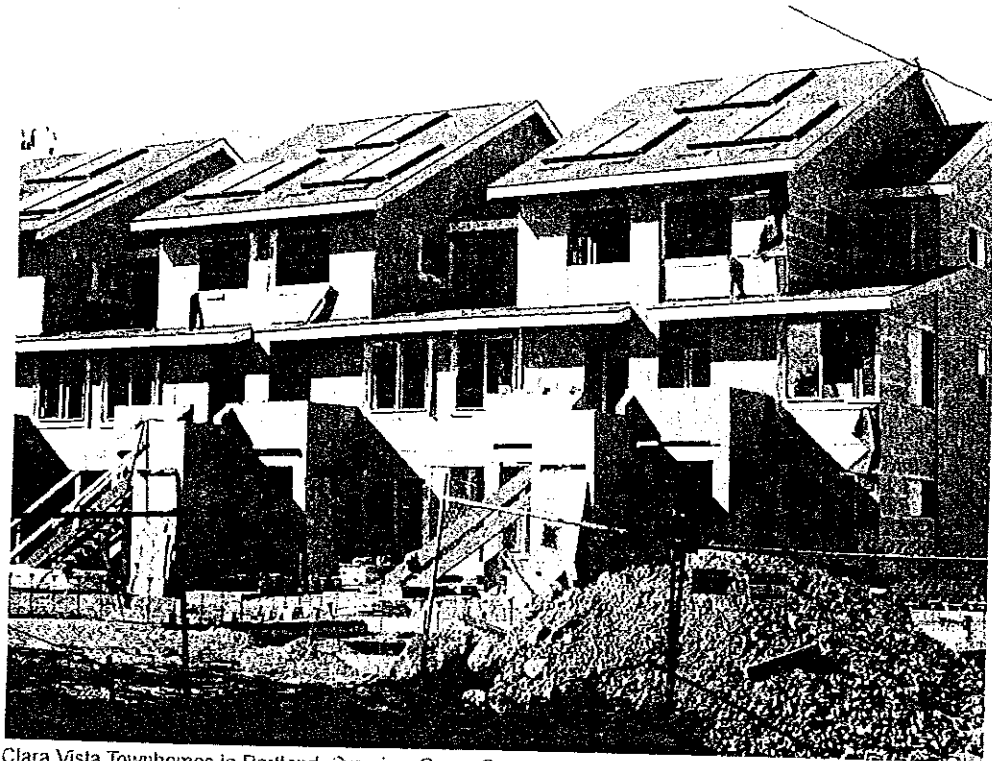
penalizing developers with less capacity or forcing developers to incur infeasibly higher costs. Consider that 80 percent of HUD grantees throughout New England adopted Energy Star Qualified New Home Specifications in 2005-2006 without being required by HUD.⁴⁴

In addition, the Federal Housing Administration (FHA) has authority to insure 20 percent higher mortgages for single and multifamily properties with solar power; that amount should be increased and FHA should work with housing and solar industry organizations to promote an expanded FHA solar product. HUD should provide funds for technical assistance to expand the use of renewable energy in very low-income homes as well.

Green the revitalization of distressed public housing communities

In January 2008, the House of Representatives passed the HOPE VI Improvement and Reauthorization Act of 2007 (H.R. 3524) by a wide bipartisan margin. The bill authorizes \$800 million annually from 2008-2013 for mixed-income communities that incorporate Green Communities Criteria. The Criteria are a holistic environment framework developed by Enterprise and a number of leading environmental, energy, green building and smart growth experts for affordable housing. Energy efficiency, based on Energy Star and other proven approaches, is a core component of the Criteria.

The bill requires new HOPE VI revitalization projects to meet the Green Communities Criteria for residential construction. It also gives more points in the HOPE VI selection process for greater compliance with Green Communities or other green rating systems chosen by the Secretary of HUD. For non-residential buildings, the bill requires the HUD Secretary to choose an appropriate green rating system. The bill provides funding for technical assistance to ensure developments can meet the green requirements cost effectively.



Clara Vista Townhomes in Portland, Ore., is a Green Communities development that uses solar power.
(Enterprise photo)

If enacted, the bill would create thousands of new and rehabilitated rental and owner-occupied homes for very low-income people that meet and exceed the Energy Star standards, with significant energy savings, carbon reductions and job opportunities in low-income communities.

A remarkably broad-based coalition of governors, mayors, trade associations, environmental organizations, public health groups, very low-income housing advocates and green building leaders actively advocated for the green provisions in the bill. Congress should pass it and fund it at the level the House authorized.

Improve and expand federal credits for residential energy efficiency and solar power

The New Energy Efficient Homes Credit should

be extended until 2011. A more flexible energy performance standard should be applied for homes serving very low-income people. And the credit should be modified to support very low-income rental, multifamily properties.

In addition, the Business Energy Tax Credit should be made permanent and the amount for solar set at 30 percent permanently. And properties serving very low-income people should be able to realize the full value of the credit without regard to other sources of financing for the development.

Finally, the Nonbusiness Energy Property Tax Credit that expired in 2007 should be reauthorized, made permanent and increased to \$5,000 for very low-income homes.

Incentivize major financial institutions to finance energy efficient very low-income homes

A bill passed by the House of Representatives, the Federal Housing Finance Reform Act of 2007 (H.R. 1427), which strengthens the federal financial oversight of Fannie Mae and Freddie Mac, includes a provision giving the companies extra credit toward meeting their affordable housing goals for purchasing mortgages on properties that are energy efficient or otherwise environmentally responsible. The provision could help mainstream mortgage products that recognize and encourage more sustainable homes and developments. Congress should pass the bill.

In addition, federal regulators should allow banks to receive favorable consideration under the Community Reinvestment Act (CRA) regulations for lending, investments and services that account for the extent to which an affordable housing project incorporates energy efficiency features that lower the housing costs for residents and/or enhance the long-term viability of the project as affordable housing, such as through stronger reserves for maintenance and improvements. More broadly, the CRA should be strengthened to encourage banks to provide financing for holistic environmentally sustainable community development.

Support research and drive innovation to deepen energy efficiency

Research and development of leading edge practices, technologies and financing mechanisms must be an important part of a holistic energy efficiency agenda for very low-income housing. For example, the use of photovoltaics, combined with 60 percent to 70 percent energy efficiency, creates the possibility of "zero net energy homes." The Pew Center on Global Climate Change reports that the cost premium for such an approach is 25 percent today but "may be achievable as a cost-competitive housing alternative by 2020."⁴⁵

Such results will likely take longer to achieve in the very low-income sector, but as noted earlier, very low-income housing also can be a driver of innovation in this area. There is growing interest among providers of very low-income housing in using photovoltaics and other renewable energy technologies and a number of leading developments that demonstrate what can be done. Investments in research and development with a particular focus on very low-income homes should be a priority.

Appendix

Innovators Advancing Energy Efficiency in Homes for Very Low-Income Households

The following list is not intended to be exhaustive, but merely illustrative of the diversity, creativity and commitment of organizations that are advancing innovative and potentially scalable approaches to increasing energy efficiency in homes for very low-income people across the country. Federal policymakers should turn to these and other leaders to refine and implement a national commitment to achieve that goal.

Advanced Energy's (www.advancedenergy.org) SystemVision program provides funding and technical support throughout design, construction and marketing of homes as well as a guaranteed amount for each home's heating and cooling energy for affordable home developers. Advanced Energy has worked in partnership with the North Carolina Housing Finance Agency and more than 45 nonprofit builders in North Carolina, including community development corporations, Habitat for Humanity affiliates, local governments, public housing authorities and other nonprofits to help build 1,322 energy efficient affordable homes.

The Affordable Housing Energy Efficiency Alliance (www.h-m-g.com/multifamily/aheea/default.htm), administered by the Hescong Mahone Group, provides training and information to affordable housing owner-developers, housing authorities, redevelopment agencies and support services agencies in California. The Alliance provides training in all aspects of energy efficiency, construction, rehabilitation and financing; project-specific technical assistance, including energy efficiency design charrettes and workshops; and assistance to housing authorities in creating lower utility allowances for projects to help pay back investments in energy efficiency.

Boston Community Capital's (www.bostoncommunitycapital.org) Energy Advantage Program has committed \$10 million to partner with organizations to provide a wide range of energy investments and services to a pool of affordable housing developments representing more than 3,450 units of housing in Massachusetts. The program's priorities include: energy conservation; energy efficient HVAC equipment and control systems; water conservation; energy management; utility demand response; long-term electricity and fuel supply contracts; solar photovoltaics; other onsite electricity generation; cogeneration; solar hot water; and programs impacting occupant energy usage.

The Boston Housing Authority (BHA) (www.bostonhousing.org) is among the leading PHAs in using energy performance contracting, particularly to deal with an inefficient energy infrastructure, resulting in \$40 million in annual utility expenses. The BHA has completed two energy performance contracts resulting in \$17 million in privately financed upgrades in nine developments serving 2,700 residents. The agency is negotiating a third contract to finance \$45 million to \$50 million of improvements at 14 sites.

The City of Houston (www.c40cities.org/bestpractices/energy/houston_weather.jsp) has intensively targeted an ambitious weatherization initiative in a neighborhood with many low-income homeowners in older houses. The city enlisted CenterPoint, its electricity distribution company, to offer free energy efficiency retrofits through local contractors and the Houston Advanced Research Center to provide cost-benefit analysis and data collection. The program has weatherized more 641 homes, saving families an average of \$870 annually and cutting 1,100 tons of carbon emissions. The city is expanding the program to other communities and creating an educational website to promote the program and its benefits.

The Clinton Climate Initiative (CCI) of the William J. Clinton Foundation (www.clintonfoundation.org/cf-pgm-cci-home.htm) is working with public housing authorities on programs to expand performance contracting and procurement practices to drive down the cost of energy efficient products. CCI has announced a partnership with the New York City Housing Authority and HUD to perform building retrofits as well as boiler and heating system modernizations that will lead to a reduction in greenhouse gas emissions from the authority's 2,600-building portfolio. CCI is also partnering with Enterprise and other organizations to develop large-scale financing models for energy efficiency in privately owned affordable housing.

The Energy Programs Consortium (www.energyprograms.org) is developing a pilot for a low-income energy efficient mortgage program in several states. The program would have similar energy audit standards, rehabilitation inspection protocols and borrower requirements to encourage broad lender participation. State agencies would provide financing and grants through existing programs, perhaps on more favorable terms. Nonprofit community-based groups would market and broker loans and provide services to borrowers. EPC also does research on energy efficiency in affordable housing, provides technical assistance to developers and government agencies and advocates for weatherization and home energy assistance.

Efficiency Vermont (www.efficiencyvermont.com/pages/Common/AboutUs) provides a wide range of financial and technical assistance to owners and builders. Services include rebates for qualifying energy-efficient appliances, lighting/heating/hot water/ventilation equipment; construction/renovation plan review; energy-efficient product sourcing commissioning; and post construction inspections and commissioning. For low-income multifamily developments, the agency also performs low-cost weatherization services.

Enterprise (www.enterprisecommunity.org) provides funds and expertise to enable developers to build and rehabilitate homes that are healthier, more energy-efficient and better for the environment without compromising affordability and assists state and local governments to ensure their housing and economic development policies are smart and sustainable. Enterprise has invested \$570 million to support more than 11,000 green, energy-efficient homes for low-income people, trained more than 3,500 housing professionals and advised more than 20 states and cities on policy development through the Green Communities initiative (www.greencommunitiesonline.org). Enterprise is piloting several new innovations to deepen energy efficiency in affordable housing, including energy retrofit financing and carbon offsets for affordable development.

The New York State Energy Research and Development Authority (NYSERDA) (<http://www.nyserda.org/default.asp>) administers the New York Energy Smart™ Loan Fund. The Fund enables lenders to provide much lower cost financing on loans for certain energy efficiency improvements and/or renewable technologies on new and existing multifamily buildings. The interest rate reduction for most of the state is up to 4 percent and up to 6.5 percent in some areas. NYSERDA also administers a number of technical assistance and training programs for low-income owners, developers and property managers.

Pacific Gas and Electric Company (www.pge.com) delivers weatherization services and energy efficient appliances to low-income families through the Energy Partners Program, administered by the California Public Utilities Commission. The program, which serves a widely diverse population statewide, also includes contractors' trainings, home inspections and program evaluation. The program has served 1.5 million customers, weatherized more than 840,000 homes and cut energy bills by more than \$350 million.⁴⁶

Performance Systems Development, LLC (PSD) (www.psdconsulting.com/index.html) partners with national and local companies on programs that change the marketplace for energy and building services. The firm's capabilities include development, implementation and management of information management systems to support increased energy efficiency, including online intranets for project support, web-based applications and design of structured information databases for training and evaluation. PSD also performs energy modeling, home energy ratings, inspections, program evaluation and renewable energy services.

Shorebank (www.shorebankcorp.com) has invested \$182 million in energy and environmental loans since 2000. Its Homeowners' Energy Conservation Program is a public-private partnership that assists homeowners in incorporating energy efficiency into renovation plans. The program provides homeowners a free consultation, detailed cost-benefit analysis and offers loans up to 100 percent of the rehabilitation costs. Those homeowners selecting more than \$2,000 in identified energy-saving features receive a free Energy Star refrigerator.

Southface (www.southface.org) provides extensive technical assistance for residential construction and remodeling projects throughout the Southeast. These services are targeted to professional contractors, homeowners, homebuyers and anyone who is building a new home, remodeling an existing home or looking for ways to make their existing home healthier and more energy-efficient. Southface's EarthCraft program includes design criteria and certifications for affordable homes and communities.

Stewards of Affordable Housing for the Future (SAHF)'s (<http://sahfenergy.com>) "SAHF Energy" initiative is evaluating opportunities for energy efficiency improvements across the housing portfolios of its member national nonprofit affordable housing owners (Mercy Housing, Inc., National Affordable Housing Trust, NIIT/Enterprise Preservation Corporation, Preservation of Affordable Housing, Retirement Housing Foundation and Volunteers of America). The organization is engaged in data collection on building performance; identification of financing barriers that restrict the flow of capital; and development of policy proposals.

Endnotes

- 1 The other widely cited impediments to better building efficiency overall – information gaps and resulting problems of perception and split incentives between those who pay for improvements and those who benefit from them – can be at least partially addressed in very low-income housing through the financing policies at the heart of this paper as well.
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- 3 “Foundations for Future Growth in the Remodeling Industry,” Joint Center for Housing Studies of Harvard University (2007).
- 4 “The Increasing Burdens of Energy Costs on Low-Income Consumers,” American Gas Association (September 26, 2007).
- 5 “2005 National Energy Assistance Survey,” National Energy Assistance Directors Association (September 2005).
- 6 “African Americans and Climate Change: An Unequal Burden,” Congressional Black Caucus Foundation (July 21, 2004).
- 7 “Trade-Offs in Allocating Allowances for CO₂ Emissions,” Congressional Budget Office (April 25, 2007).
- 8 Ibid.
- 9 Robert Greenstein, Sharon Parrott and Arloc Sherman, “Designing Climate Change Legislation that Shields Low-Income Households From Increased Poverty and Hardship,” Center on Budget and Policy Priorities (November 8, 2007).
- 10 See www.energystar.gov/index.cfm?c=new_homes.nh_benefits.
- 11 “Estimating the value of first Energy Investment: Habitat for Humanity,” The Center for Public Management, Maxine Goodman Levin College of Urban Affairs, Cleveland State University (May 2005).
- 12 William Bradshaw et al., “The Costs & Benefits of Green Affordable Housing,” New Ecology and the Tellus Institute (2005).
- 13 Jennifer Thorne Amman, “Valuation of Non-Energy Benefits to Determine Cost-Effectiveness of Whole House Retrofits Programs: A Literature Review,” American Council for an Energy-Efficient Economy (May 2006).
- 14 Robert A. Sinons, “Do Housing Rehabs Pay Their Way? A National Case Study,” *Journal of Real Estate Research*, (October- December 2003).
- 15 “Income, Energy Efficiency and Emissions: The Critical Relationship,” Energy Programs Consortium (February 26, 2008)
- 16 Ibid.
- 17 Ibid.
- 18 “Testimony of Dan W. Reicher, Director, Climate Change and Energy Initiatives, Before the Senate Committee on Finance” Google.org (February 27, 2007).
- 19 John Podesta, Laura Tyson, Sara Rosen Wartell, “A Practical and Progressive Economic Stimulus and Recovery Plan,” Center for American Progress (January 17, 2008).
- 20 Raquel Pinderhughes, Ph.D., “Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Employment,” City of Berkeley Office of Energy and Sustainable Development (2007).
- 21 “Green Jobs: Towards Sustainable Work in a Low-Carbon World,” Worldwatch Institute (2008).
- 22 “Weatherization Assistance Program: Improving the Economies for Low-Income Communities,” U.S. Department of Energy (August 2006).
- 23 “Community Jobs in the Green Economy,” Apollo Alliance and Urban Habitat

(2007).

24 Reicher, *Ibid.*

25 Alex Wilson and Allyson Wendt, "The Challenge of Existing Homes: Retrofitting for Dramatic Energy Savings," *Environmental Building News* (July 2007).

26 Matthew Brown and Mark Wolfe, "Energy Efficiency in Multifamily Housing: A Profile and Analysis," *Energy Programs Consortium* (June 2007).

27 "Promoting Energy Efficiency at HUD in a Time of Change: Report to Congress," U.S. Department of Housing and Urban Development, Washington, DC (August 8, 2006).

28 "America's Rental Housing: Homes for a Diverse Nation," Joint Center for Housing Studies of Harvard University (2006).

29 *Ibid.*

30 State agencies that administer the LIHTC have increased requirements and incentives for achieving greater energy efficiency in LIHTC projects in the last few years. See "An Even Greener Plan for Very Low-Income Housing," by James Tassos for Enterprise Community Partners and additional analysis by Enterprise, forthcoming.

31 In response to recommendations by a number of housing organizations, the IRS issued proposed regulations in June providing developers and owners greater flexibility to calculate more accurate utility allowances in LIHTC properties. The proposed regulations would allow owners to use a new publicly available online HUD computer model (<http://www.huduser.org/resources/utimodel.html>) to calculate utility allowances even if the local housing agency does not. Owners also could use a utility allowance estimate that the state housing agency provides. In addition, the proposed regulations would require a building owner to review, at least annually, the basis on which utility allowances have been established and update the applicable utility allowance. The proposed rule requires the review take into account any changes to the building such as any energy conservation measures that affect energy consumption and changes in utility rates.

32 "Affordable Housing Needs 2005: Report to Congress," U.S. Department of Housing and Urban Development (2007).

33 "Weatherization Works!," U.S. Department of Energy (2007).

34 *Ibid.*

35 Reicher, *Ibid.*

36 See www.dsireuse.org.

37 U.S. Department of Housing and Urban Development, *Ibid.*

38 *Ibid.*

39 If a PHA reduces its utility rates through its own actions, it may retain half of any resulting operating savings.

40 *Ibid.*

41 Mark Levine, et. al. "Residential and Commercial Buildings," In *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007).

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43: The Energy Independence and Security Act of 2007 requires certain HUD-assisted smaller projects to use the 2006 International Energy Code and multifamily high rises to meet or exceed the energy efficiency standards of the American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 90.1-2004.

44 "Partnerships for Home Energy Efficiency: 2006 Annual Report," U.S. Department of Housing and Urban Development, U.S. Department of Energy, U.S. Environmental Protection Agency (2006).

45 Pew Center on Global Climate Change, *Ibid.*

46 For a comprehensive analysis of leading utility-funded low-income programs, see Martin Kushler, Ph.D., Dan York, Ph.D., and Parti White, "Meeting Essential Needs: The Results of a National Search for Exemplary Utility-Funded Low-Income Energy Efficiency Programs," American Council for an Energy Efficient Economy (September 2005).